EXHIBIT 30

From:	Wilber Su <wilber@cisco.com>
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CC:	ricarlso@cisco.com <ricarlso@cisco.com>;wilber@cisco.com <wilber@cisco.com>
Sent:	9/4/1998 8:58:27 PM
Subject:	Parser change for 12.0(3)T feature: Policy Routing Infra. Update

It's basically a project bringing Policy Routing up-to-date by
integrating it with CEF(Cisco Express Forwarding, FIB-based routing),
DCEF(Distributed CEF) and Netflow. For details, please refer to,

Functional Spec: ENG-26419
Design Spec: ENG-26691

Configuring policy-routing is exactly the same as before and no new
commands are needed. As soon as CEF, DCEF or Netflow is
enabled/disabled, appropriate switching paths will be automatically
chosen.

Commands being modified/extended,

(1) Configuration command,

- 'set ip next-hop verify-availability'

Add one more option to route-map subcommand, 'set ip next-hop', to
force policy-routing verifies if the configured next-hop is one of our
cdp neighbors before trying to policy-route the packet to it. This is
a new functionality.

```
snug(config)#route-map test
snug(config-route-map)#set ip next-hop ?
A.B.C.D IP address of next hop
peer-address Use peer address (for BGP only)
verify-availability Verify if nexthop is a CDP neighbor
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
<cr>
```


(2) Show commands,

- 'show route-map'

No change to the command but support has been extended to VIP/LC
console to display the policy-routing related routemap configuration
that being downloaded from RP to VIP/LC.

```
VIP-Slot0#sh route-map
route-map test, permit, sequence 10
Match clauses:
Set clauses:
ip next-hop 50.0.0.8
Policy routing matches: 5 packets, 570 bytes
```


- 'show route-map <ipc>'

Expand the current 'show route-map' command to take an optional
keyword 'ipc' to display the ipc message statistics.

```
snug#show route-map ?
WORD route-map name
ipc Show route-map config download info
```

```
| Output modifiers
<cr>

snug#show route-map ipc

Route-map RP IPC Config Updates Sent
Name : 2
Match access-list : 0
Match length : 0
Set precedence : 0
Set tos : 0
Set nexthop : 1
Set interface : 0
Set default nexthop : 0
Set default interface : 0
Clean all : 1



(3) Debug commands,

- 'debug ip policy <acl>'

Expand the current 'debug ip policy' command to take an optional
access-list to filter the debug output. Currently it's in
process-level only and the support has been extended to CEF, DCEF and
Netflow to facilitate debugging.

snug#debug ip policy ?
<1-199> Access list
<cr>

snug#debug ip policy 10
Policy routing debugging is on for access list 10



- 'debug route-map ipc'

Print out the summary of policy-routing related routemap ipc messages
being sent or received,

snug#debug route-map ?
ipc Route-map configs related ipc

snug#debug route-map ipc
Routemap related IPC debugging is on

snug#conf t
Enter configuration commands, one per line. End with CNTL/Z.
snug(config)#ip cef distributed
snug(config)#^Z

snug#
10:54:22: RM-IPC: Clean routemap config in slot 0
10:54:22: RM-IPC: Sent clean-all-routemaps; len 12
10:54:22: RM-IPC: Download all policy-routing related routemap config to slot 0
10:54:22: RM-IPC: Sent add routemap test(seq:10); n_len 5; len 17
10:54:22: RM-IPC: Sent add nexthop 50.0.0.8 of routemap test(seq:10); len 20



Relevant diff is attached below. For complete diff, see,

ftp-eng% cd /ftp/wilber/policy
ftp-eng% ls -l diff.policy
-rw-rw-r-- 1 wilber eng 273996 Sep 4 13:55 diff.policy
```

```
My view,

Server: irp-view4:/vws/dnz

irp-view4% ct catcs
# TASK_BRANCH = "wilber_sj-6_120t_policy" /* DO NOT modify or remove this line.
*/
element * CHECKEDOUT
element * .../wilber_sj-6_120t_policy/LATEST
time 21-Aug-98.22:28:49
element * .../conn_t/LATEST  mkbranch wilber_sj 6_120t_policy
element * V120_0_18 -mkbranch wilber_sj-6_120t_policy
element * /main/0 -mkbranch wilber_sj-6_120t_policy


Please let me know if you have any comments, thanks.

Wilber




=======================================================================
Parser related diff,

COMMAND: ccdiff -c /vob/ios.sys1/sys/h/parser.h@@/main/connecticut/conn_t/9 /view/wilber-
120t_policy/vob/ios.sys1/sys/h/parser.h
Index: sys/h/parser.h
=======================================================================
*** /vob/ios.sys1/sys/h/parser.h@@/main/connecticut/conn_t/9 Thu Aug 20 20:32:00 1998
--- /view/wilber-120t_policy/vob/ios.sys1/sys/h/parser.h Tue Aug 25 18:15:48 1998
**************
*** 646,651 ****
--- 646,653 ----
PARSE_ADD_CFG_ROUTEMAP_SET_CMD, /* route map set */
PARSE_ADD_CFG_ROUTEMAP_MATCH_CMD, /* route map match */
PARSE_ADD_CFG_ROUTEMAP_SET_IP_CMD, /* route map set ip */
+ PARSE_ADD_DEBUG_ROUTEMAP_CMD, /* route map debug */
+ PARSE_ADD_SHOW_ROUTEMAP_EXTEND, /* show routemap extensions */
PARSE_ADD_CFG_CFGTBL_CMD, /* ATM Lane Lecs commands */
PARSE_ADD_PING_EXIT, /* Ping command exit */
PARSE_ADD_GLOBAL_EXIT, /* Global command exit */
=======================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/cfg_routemap_set_ip.h@@
/main/connecticut/2 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/cfg_routemap_set_ip.h
Index: sys/iprouting/cfg_routemap_set_ip.h
=======================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/cfg_routemap_set_ip.h@@
/main/connecticut/2 Sun Jun 7 22:05:17 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/cfg_routemap_set_ip.h Tue Aug 25
18:15:06 1998
**************
*** 54,59 ****
--- 54,60 ----
* OBJ(int, 1) = community number for set community
* OBJ(int, 2) = TRUE if it is set community additive.
* OBJ(int, 2) = TRUE if "set ip next-hop peer-address".
+ * OBJ(int, 3) = TRUE if "set ip next-hop verify-availability".
*/

LINK_EXIT(routemap_set_ip_return, no_alt);
**************
*** 79,85 ****
routemap_set_ip_nexthop_peeraddr_set,
routemap_set_ip_nexthop_ip,
"peer-address", "Use peer address (for BGP only)", PRIV CONF);
! KEYWORD (routemap_set_ip_nexthop, routemap_set_ip_nexthop_peeraddr,
routemap_set_ip_extend_here,
```

```
"next-hop", "Next hop address", PRIV_CONF);

--- 80,91 ----
routemap_set_ip_nexthop_peeraddr_set,
routemap_set_ip_nexthop_ip,
"peer-address", "Use peer address (for BGP only)", PRIV_CONF);
! SET (routemap_set_ip_nexthop_verify_set, routemap_set_ip_nexthop_eol,
! OBJ(int,3), TRUE);
! KEYWORD (routemap_set_ip_nexthop_verify, routemap_set_ip_nexthop_verify_set,
! routemap_set_ip_nexthop_peeraddr, "verify-availability",
! "Verify if nexthop is a CDP neighbor", PRIV_CONF);
! KEYWORD (routemap_set_ip_nexthop, routemap_set_ip_nexthop_verify,
routemap_set_ip_extend_here,
"next-hop", "Next hop address", PRIV_CONF);


=============================================================================


COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/exec_debug_ip_policy.h@@/main/3 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/exec_debug_ip_policy.h
Index: sys/iprouting/exec_debug_ip_policy.h
=============================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_debug_ip_policy.h@@/main/3 Thu
Nov 9 12:07:06 1995
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_debug_ip_policy.h Fri Sep 4
13:04:41 1998
***************
*** 5,11 ****
*
* Sep 1995 Tony Li
*
! * Copyright (c) 1995 by cisco Systems, Inc.
* All rights reserved.
*-----------------------------------------------------------------
* $Log: exec_debug_ip_policy.h,v $
--- 5,11 ----
*
* Sep 1995 Tony Li
*
! * Copyright (c) 1995, 1998 by cisco Systems, Inc.
* All rights reserved.
*-----------------------------------------------------------------
* $Log: exec_debug_ip_policy.h,v $
***************
*** 25,35 ****
*/

/********************************************************************
! * debug ip policy
*
*/
! EOLS (debug_ip_policy_eol, iprouting_debug_command, DEBUG_POLICY);
! KEYWORD (debug_ip_policy, debug_ip_policy_eol, no_alt,
"policy", "Policy routing", PRIV_OPR);

#undef ALTERNATE
--- 25,38 ----
*/

/********************************************************************
! * debug ip policy [<access-list>]
*
+ * OBJ(int,1) = access-list
*/
! EOLS (debug_ip_policy_eol, ip_policy_debug_command, DEBUG_POLICY);
! NUMBER (debug_ip_policy_list, debug_ip_policy_eol, debug_ip_policy_eol,
! OBJ(int,1), MINFASTACC, MAXSLOWACC, "Access list");
! KEYWORD (debug_ip_policy, debug_ip_policy_list, no_alt,
```

```
"policy", "Policy routing", PRIV_OPR);

#undef ALTERNATE
========================================================================


COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_debug_routemap.h@@
/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_debug_routemap.h
Index: sys/iprouting/exec_debug_routemap.h
========================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_debug_routemap.h@@/main/0 Sat Jul
4 20:34:01 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_debug_routemap.h Tue Aug 25
18:15:35 1998
***************
*** 0 ****
--- 1,23 ----
+ /*
+ *----------------------------------------------------------------
+ * exec_debug_routemap.h -- Debugging for Route-map IPC
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
+ * All rights reserved.
+ */
+
+ /***********************************************************************
+ * debug route-map ipc
+ */
+
+ EOLS (debug_routemap_ipc_eol, routemap_debug_command, DEBUG_ROUTEMAP_IPC);
+ KEYWORD (debug_routemap_ipc, debug_routemap_ipc_eol, no_alt,
+ "ipc", "Route-map configs related ipc", PRIV_OPR);
+
+ KEYWORD (debug_routemap, debug_routemap_ipc, no_alt,
+ "route-map", "Route-map", PRIV_OPR);
+
+ #undef ALTERNATE
+ #define ALTERNATE debug_routemap
========================================================================


COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_show_route-map.h@@
/main/connecticut/1 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_show_route-map.h
Index: sys/iprouting/exec_show_route-map.h
========================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_show_route-map.h@@
/main/connecticut/1 Thu Jun 4 01:06:42 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_show_route-map.h Fri Sep 4
13:12:51 1998
***************
*** 3,11 ****
  *----------------------------------------------------------------
  * exec_show_route-map.h
  *
! * Month Year, Your Name
! *
! * Copyright (c) 1993-1996 by cisco Systems, Inc.
  * All rights reserved.
  *
  * Command parsing chain for "show route-map".
--- 3,9 ----
  *----------------------------------------------------------------
  * exec_show_route-map.h
  *
! * Copyright (c) 1993-1996, 1998 by cisco Systems, Inc.
  * All rights reserved.
  *
  * Command parsing chain for "show route-map".
```

```
**************
*** 40,48 ****
* OBJ(string,1) = map name
*/
EOLNS (show_routemap_eols, show_route_map);
! STRING (show_routemap_string, show_routemap_eols, show_routemap_eols,
! OBJ(string,1), "route-map name");
! KEYWORD (show_routemap, show_routemap_string, ALTERNATE,
"route-map", "route-map information", PRIV_USER|PRIV_USER_HIDDEN);

#undef ALTERNATE
--- 39,49 ----
* OBJ(string,1) = map name
*/
EOLNS (show_routemap_eols, show_route_map);
! STRING (show_routemap_string, show_routemap_eols, show_routemap_eols,
! OBJ(string,1), "route-map name");
! TEST_MULTIPLE_FUNCS(show_routemap_stest, show_routemap_string, NONE,
! no_alt);
! LINK_TRANS(show_routemap_extend, show_routemap_stest);
! KEYWORD (show_routemap, show_routemap_extend, ALTERNATE,
"route-map", "route-map information", PRIV_USER|PRIV_USER_HIDDEN);

#undef ALTERNATE
================================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/exec_show_routemap_ipc.h@@/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/exec_show_routemap_ipc.h
Index: sys/iprouting/exec_show_routemap_ipc.h
================================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_show_routemap_ipc.h@@/main/0 Sat
Jul 25 15:17:15 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/exec_show_routemap_ipc.h Tue Aug 25
18:14:30 1998
**************
*** 0 ****
--- 1,21 ----
+ /* $Id: exec_show_routemap_ipc.h
+ *--------------------------------------------------------------
+ * Show route-map ipc stats parse chain.
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
+ * All rights reserved.
+ *--------------------------------------------------------------
+ * $Endlog$
+ */
+
+ /**************************************************************************
+ * show route-map ipc
+ */
+ EOLS (show_routemap_ipc_eol, reg_invoke_show_routemap_ipc, 0);
+ KEYWORD (show_routemap_ipc, show_routemap_ipc_eol, ALTERNATE,
+ "ipc", "Show route-map config download info",
+ PRIV_USER | PRIV_USER_HIDDEN);
+ #undef ALTERNATE
+ #define ALTERNATE show_routemap_ipc
--------------------------------------------------------------

COMMAND: ccdiff -c /vob/ios.sys2/sys/iprouting/ip_policy_chain.c@@/main/connecticut/2
/view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_chain.c
Index: sys/iprouting/ip_policy_chain.c
================================================================================
*** /vob/ios.sys2/sys/iprouting/ip_policy_chain.c@@/main/connecticut/2 Mon Jul 6 12:02:55 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_chain.c Tue Aug 25 18:10:17
1998
```

```
**************
*** 131,144 ****
  #undef ALTERNATE

  /*
- * Parse chains for policy routing debugging.
- */
- #define ALTERNATE NONE
- #include "exec_debug_ip_policy.h"
- LINK_POINT(debug_ip_policy_commands, ALTERNATE);
  #undef ALTERNATE
-
- /*
* Parse chain registration array for IP policy routing
*/
static parser_extension_request ip_policy_chain_init_table[] = {
--- 131,136 ----
**************
*** 155,161 ****
{ PARSE_ADD_CFG_IP_LOCAL_CMD, &pname(ip_local_policy_commands) },
{ PARSE_ADD_SHOW_IP_LOCAL_CMD, &pname(show_ip_local_policy_commands) },
{ PARSE_ADD_SHOW_IP_CMD, &pname(show_ip_policy_commands) },
- { PARSE_ADD_DEBUG_IP_CMD, &pname(debug_ip_policy_commands) },
{ PARSE_ADD_SHOW_IP_CACHE_PRECMD, &pname(show_ip_cache_policy_commands) },
{ PARSE_LIST_END, NULL }
};
--- 147,152 ----
====================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.c@@
/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.c
Index: sys/iprouting/ip_policy_debug.c
====================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.c@@/main/0 Tue Jul 7
11:23:21 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.c Tue Aug 25 18:16:32
1998
**************
*** 0 ****
--- 1,132 ----
+ /*
+ *------------------------------------------------------------------
+ * ip_policy_debug.c -- IP Policy Routing debugging support
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
+ * All rights reserved.
+ *------------------------------------------------------------------
+ */
+
+ #include "master.h"
+ #include "sys_registry.h"
+ #include "config.h"
+
+ #include "../ui/debug.h"
+ #include "parser.h"
+ #include "../parser/parser_actions.h"
+ #include "../parser/macros.h"
+ #include "../parser/parser_defs_parser.h"
+ #include "../iprouting/ip_policy_debug.h"
+
+ /* Declare the initialized text for the debugging array */
+ #define __DECLARE_DEBUG_ARR__
+ #include "ip_policy_debug_flags.h"
+
+ /*
+ * Initialization and storage allocation for the access list that
```

```
+ * restricts policy-routing packet debugging output.
+ */
+ int ip_policy_debug_acl = 0;
+
+ /*
+ * ip_policy_debug_command
+ *
+ * Handles debug commands related to IP policy routing
+ */
+ void
+ ip_policy_debug_command (parseinfo *csb)
+ {
+ ip_policy_debug_acl = GETOBJ(int,1);
+
+ /* If there's no special case, use the generic handler */
+ SETOBJ(pdb,1) = (void *) ip_policy_debug_arr;
+ debug_command(csb);
+
+ if (ip_policy_debug_acl)
+ printf(" for access list %d", ip_policy_debug_acl);
+ }
+
+ /*
+ * ip_policy_debug_all
+ *
+ * is registered to be called whenever anybody issues
+ * a "debug all" or "undebug all" command... or whenever you want to
+ * set the state of all the ip policy debug flags at once. The argument is
+ * TRUE for "debug all", FALSE for "undebug all".
+ */
+ static void ip_policy_debug_all (boolean flag)
+ {
+ if (!flag)
+ ip_policy_debug_acl = 0;
+
+ generic_debug_all(ip_policy_debug_arr, flag);
+ }
+
+ /*
+ * ip_policy_debug_show
+ *
+ * is called to display the values of all the ip policy debugging variables.
+ */
+ static void ip_policy_debug_show (void)
+ {
+ int i;
+ boolean hdisplayed = FALSE; /* Printed the heading yet? */
+ boolean willprint; /* Will we print anything on this line? */
+
+ for (i = 0; ip_policy_debug_arr[i].var != (boolean *) NULL; i++) {
+
+ /*
+ * Normally, we only print stuff that doesn't match the current
+ * status of "debug all". However, if something restricts the
+ * output associated with a flag that's turned on, we need to
+ * talk about that flag even if "debug all" is turned on.
+ */
+ willprint = (!*(ip_policy_debug_arr[i].var) != !debug_all_p());
+ if ((i == DEBUG_POLICY) && ip_policy_debug_acl)
+ willprint = TRUE;
+
+ if (willprint) {
+ if (!hdisplayed) {
+ printf("\nPolicy Routing:");
+ hdisplayed = TRUE;
+ }
+
+ printf("\n %s debugging is %s",
```

```
+ ip_policy_debug_arr[i].txt,
+ *(ip_policy_debug_arr[i].var) ? "on" : "off");
+ if (i == DEBUG_POLICY) {
+ if (ip_policy_debug_acl)
+ printf(" for access list %d", ip_policy_debug_acl);
+ }
+ }
+ }
+ }
+
+
+ /*
+ * ip_policy_debug_init
+ *
+ * is called at subsystem startup. It registers
+ * the routines to maintain and display the ip policy debug flags, and
+ * makes sure the flags are set to the appropriate values depending on
+ * whether "debug all" is in effect when ip policy is started.
+ */
+ void ip_policy_debug_init (void)
+ {
+
+ /* Register for "debug all" and "show debug" events. A Real Programmer
+ * would be prepared to do something with the error code returned
+ * from registry_add_list. Oh, well...
+ */
+ reg_add_debug_all(ip_policy_debug_all, "ip_policy_debug_all");
+ reg_add_debug_show(ip_policy_debug_show, "ip_policy_debug_show");
+
+ /* Make sure the debug flags are right at startup. If "debug all"
+ * is in effect when ip policy is initialized, we want to turn on
+ * all the ip policy debugging right now.
+ */
+ ip_policy_debug_all(debug_all_p());
+ }
+
===============================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.h@@
/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.h
Index: sys/iprouting/ip_policy_debug.h
===============================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.h@@/main/0 Tue Jul 7
11:17:00 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug.h Tue Aug 25 18:16:07
1998
***************
*** 0 ****
--- 1,24 ----
+ /* $Id: ip_policy_debug.h
+ *-------------------------------------------------------------------
+ * ip_policy_debug.h -- Debugging declarations for IP routing
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by Cisco Systems, Inc.
+ * All rights reserved.
+ *-------------------------------------------------------------------
+ */
+
+ /* Function to fire up IP policy debugging */
+ extern void ip_policy_debug_init(void);
+
+ extern void ip_policy_ics_parser_init(void);
+
+ /*
+ * The actual debugging flags are defined in iprouting_debug_flags.h.
+ * We include that file twice, once to define the flags themselves
```

```
+ * and once to define the indices that the parser uses.
+ */
+ #include "../iprouting/ip_policy_debug_flags.h"
+ #define __DECLARE_DEBUG_NUMS__
+ #include "../iprouting/ip_policy_debug_flags.h"
==============================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/ip_policy_debug_flags.h@@/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/ip_policy_debug_flags.h
Index: sys/iprouting/ip_policy_debug_flags.h
==============================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug_flags.h@@/main/0 Tue
Jul 7 11:06:31 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_debug_flags.h Tue Aug 25
18:13:46 1998
**************
*** 0 ****
--- 1,26 ----
+ /*
+ *------------------------------------------------------------------
+ * ip_policy_debug_flags.h -- Debugging flag declarations for IP policy
+ * routing
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by Cisco Systems, Inc.
+ * All rights reserved.
+ *------------------------------------------------------------------
+ */
+
+ extern int ip_policy_debug_acl;
+
+ /*
+ * We get included (multiple times) from IP routing code to define
+ * debugging flags. For this, we use some macros that get defined
+ * by debug_macros.h. What definitions the macros get depends on
+ * which magic flags have been set by the file that includes us.
+ */
+ #include "../ui/debug_macros.h"
+
+ /* Now define the actual flags and the array that points to them */
+ DEBUG_ARRDECL(ip_policy_debug_arr)
+ DEBUG_FLAG(policy_debug, DEBUG_POLICY, "Policy routing")
+ DEBUG_ARRDONE
==============================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_ios_chain.c@@
/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_ios_chain.c
Index: sys/iprouting/ip_policy_ios_chain.c
==============================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_ios_chain.c@@/main/0 Tue Jul
7 10:53:51 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/ip_policy_ios_chain.c Tue Aug 25
18:12:00 1998
***************
*** 0 ****
--- 1,49 ----
+ /*
+ *------------------------------------------------------------------
+ * ip_policy_ios_chain.c -- Parser support for IP policy routing,
+ * share by RP and LC
+ *
+ * July 1998 Wilber Su
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
+ * All rights reserved.
+ *------------------------------------------------------------------
```

```
+ */
+
+ #include "master.h"
+ #include "../ui/common_strings.h"
+ #include "config.h"
+ #include "parser.h"
+ #include "access.h"
+ #include "../ui/debug.h"
+ #include "../parser/parser_actions.h"
+ #include "../parser/macros.h"
+ #include "../parser/parser_defs_parser.h"
+ #include "../parser/parser_defs_access.h"
+ #include "../ip/ip.h"
+ #include "../iprouting/ip_policy_debug.h"
+
+ /*
+ * Parse chains for policy routing debugging.
+ */
+ #define ALTERNATE NONE
+ #include "../iprouting/exec_debug_ip_policy.h"
+ LINK_POINT(debug_ip_policy_commands, ALTERNATE);
+ #undef ALTERNATE
+
+ /*
+ * Parse chain registration array for IP policy routing
+ */
+ static parser_extension_request ip_policy_ios_chain_init_table[] = {
+ { PARSE_ADD_DEBUG_IP_CMD, &pname(debug_ip_policy_commands) },
+ { PARSE_LIST_END, NULL }
+ };
+
+ /*
+ * ip_policy_parser_init - Initialize IP Routing parser support
+ */
+ void ip_policy_ios_parser_init (void)
+ {
+ ip_policy_debug_init();
+ parser_add_command_list(ip_policy_ios_chain_init_table, "ip_policy_ios");
+ }
========================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/iprouting_chain.c@@
/main/connecticut/1 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/iprouting_chain.c
Index: sys/iprouting/iprouting_chain.c
========================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/iprouting_chain.c@@/main/connecticut/1
Thu Jun 4 01:08:04 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/iprouting_chain.c Tue Aug 25 18:17:31
1998
***************
*** 478,481 ****
--- 478,484 ----
&pname(routemap_match_return));
parser_add_link_point(PARSE_ADD_CFG_INT_IP_SPLIT_CMD, "ip split horizon",
&pname(ci_ip_split_link));
+ parser_add_link_point(PARSE_ADD_SHOW_ROUTEMAP_EXTEND,
+ "show routemap extensions",
+ &pname(show_routemap_extend));
}
------------------------------------------------------------------------

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/iprouting_debug_flags.h@@/main/connecticut/conn_t/1 /view/wilber-120t_policy/vob/ios.sys2
/sys/iprouting/iprouting_debug_flags.h
Index: sys/iprouting/iprouting_debug_flags.h
========================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/iprouting_debug_flags.h@@
/main/connecticut/conn_t/1 Thu Jul 2 08:10:28 1998
```

```
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/iprouting_debug_flags.h Tue Aug 25
18:15:41 1998
***************
*** 103,109 ****
  "OSPF summary lsa generation")
  DEBUG_FLAG(ospf_debug_tree, DEBUG_OSPF_TREE, "OSPF database events")
  DEBUG_FLAG(ospf_debug_db_timer, DEBUG_OSPF_DB_TIMER, "OSPF timer events")
- DEBUG_FLAG(policy_debug, DEBUG_POLICY, "Policy routing")
  DEBUG_FLAG(rip_debug, DEBUG_RIP, "RIP protocol")
  DEBUG_FLAG(rip_debug_dbase, DEBUG_RIP_DBASE, "RIP database events")
  DEBUG_FLAG(rip_debug_events, DEBUG_RIP_EVENTS, "RIP event")
--- 103,108 ----

==============================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.c@@
/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.c
Index: sys/iprouting/routemap_debug.c
------------------------------------------------------------------
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.c@@/main/0 Sat Jul 4
20:53:25 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.c Fri Sep 4 12:51:07
1998
***************
*** 0 ****
--- 1,91 ----
+ /*
+ *------------------------------------------------------------------
+ * routemap_debug.c -- Routemap debugging support
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
+ * All rights reserved.
+ *------------------------------------------------------------------
+ */
+
+ #include "master.h"
+ #include "sys_registry.h"
+ #include "config.h"
+ #include "../ui/debug.h"
+ #include "parser.h"
+ #include "../parser/parser_actions.h"
+ #include "../parser/macros.h"
+ #include "../parser/parser_defs_parser.h"
+ #include "routemap_debug.h"
+
+ /* Declare the initialized text for the debugging array */
+ #define __DECLARE_DEBUG_ARR__
+ #include "routemap_debug_flags.h"
+
+ /*
+ * routemap_debug_command
+ *
+ * Handles debug commands related to routemap.
+ */
+
+ void
+ routemap_debug_command (parseinfo *csb)
+ {
+
+ /* If there's no special case, use the generic handler */
+ SETOBJ(pdb,1) = (void *) routemap_debug_arr;
+ debug_command(csb);
+ }
+
+ /*
+ * routemap_debug_all
+ *
```

```
+ * is registered to be called whenever anybody issues
+ * a "debug all" or "undebug all" command... or whenever you want to
+ * set the state of all the routemap debug flags at once. The argument is
+ * TRUE for "debug all", FALSE for "undebug all".
+ */
+
+ static void routemap_debug_all (boolean flag)
+ {
+ generic_debug_all(routemap_debug_arr, flag);
+ }
+
+ /*
+ * routemap_debug_show
+ *
+ * is called to display the values of all the routemap debugging variables.
+ */
+
+ static void routemap_debug_show (void)
+ {
+ debug_show_flags(&(routemap_debug_arr[0]), "Route-map");
+ }
+
+ /*
+ * routemap_debug_init
+ *
+ * is called at subsystem startup. It registers
+ * the routines to maintain and display the routemap debug flags, and
+ * makes sure the flags are set to the appropriate values depending on
+ * whether "debug all" is in effect when routemap is started.
+ */
+
+ void routemap_debug_init (void)
+ {
+
+ /* Register for "debug all" and "show debug" events. A Real Programmer
+ * would be prepared to do something with the error code returned
+ * from registry_add_list. Oh, well...
+ */
+ reg_add_debug_all(routemap_debug_all, "routemap_debug_all");
+ reg_add_debug_show(routemap_debug_show, "routemap_debug_show");
+
+ /* Make sure the debug flags are right at startup. If "debug all"
+ * is in effect when routemap is initialized, we want to turn on
+ * all the routemap debugging right now.
+ */
+ routemap_debug_all(debug_all_p());
+ }
+
==========================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.h@@
/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.h
Index: sys/iprouting/routemap_debug.h
==========================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.h@@/main/0 Sat Jul 4
20:40:55 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug.h Tue Aug 25 18:15:54
1998
**************
*** 0 ****
--- 1,19 ----
+ /*
+ *-----------------------------------------------------------------
+ * routemap_debug.h -- Routemap debugging support
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
```

```
+ * All rights reserved.
+ *------------------------------------------------------------
+ */
+
+ /*
+ * The actual debugging flags are defined in routemap_debug_flags.h.
+ * We include that file twice, once to define the flags themselves
+ * and once to define the indices that the parser uses.
+ */
+ #include "routemap_debug_flags.h"
| #define __DECLARE_DEBUG_NUMS__
+ #include "routemap_debug_flags.h"
===========================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/routemap_debug_flags.h@@/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting
/routemap_debug_flags.h
Index: sys/iprouting/routemap_debug_flags.h
===========================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug_flags.h@@/main/0 Sat
Jul 4 20:37:27 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_debug_flags.h Tue Aug 25
18:17:11 1998
**************
*** 0 ****
--- 1,24 ----
+ /*
+ *------------------------------------------------------------
+ * routemap_debug_flags.h -- Routemap debugging support
+ *
+ * July 1998, Wilber Su
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
+ * All rights reserved.
+ *------------------------------------------------------------
+ */
+
+ /*
+ * We get included (multiple times) to define
+ * debugging flags. For this, we use some macros that get defined
+ * by debug_macros.h. What definitions the macros get depends on
+ * which magic flags have been set by the file that includes us.
+ */
+
+ #include "../ui/debug_macros.h"
+
+ /* Now define the actual flags and the array that points to them */
+ DEBUG_ARRDECL(routemap_debug_arr)
+ DEBUG_FLAG(routemap_debug_ipc, DEBUG_ROUTEMAP_IPC, "Routemap related IPC")
+ DEBUG_ARRDONE
===========================================================================

COMMAND: ccdiff -c /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_ios_chain.c@@
/main/0 /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_ios_chain.c
Index: sys/iprouting/routemap_ios_chain.c
===========================================================================
*** /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_ios_chain.c@@/main/0 Sun Jul
5 12:25:31 1998
--- /view/wilber-120t_policy/vob/ios.sys2/sys/iprouting/routemap_ios_chain.c Tue Aug 25
18:11:31 1998
**************
*** 0 ****
--- 1,59 ----
+ /* $Id: routemap_ios_chain.c
+ *------------------------------------------------------------
+ * Route-map generic ios parse chains that will be in both RP and VIP/LC
+ *
+ * July 1998, Wilber Su
```

```
+ *
+ * Copyright (c) 1998 by cisco Systems, Inc.
+ * All rights reserved.
+ *--------------------------------------------------------------------
+ */
+
+ #include "master.h"
+ #include "sys_registry.h"
+ #include "config.h"
+ #include "../ui/debug.h"
+ #include "parser.h"
+ #include "../parser/parser_actions.h"
+ #include "../parser/macros.h"
+ #include "../parser/parser_defs_parser.h"
+ #include "route_map.h"
+ #include "routemap_debug.h"
+ #include "interface_private.h"
+ #include "../ip/ip_registry.h"
+
+
+ #define ALTERNATE NONE
+ #include "exec_debug_routemap.h"
+ LINK_POINT(debug_routemap_commands, ALTERNATE);
+ #undef ALTERNATE
+
+
+ /*
+ * show route-map ipc
+ */
+ #define ALTERNATE NONE
+ #include "exec_show_routemap_ipc.h"
+ LINK_POINT(show_routemap_ipc_commands, ALTERNATE);
+ #undef ALTERNATE
+
+
+ /*
+ * Parse chain registration array for Route-map
+ */
+ static parser_extension_request routemap_chain_init_table[] = {
+ { PARSE_ADD_DEBUG_CMD, &pname(debug_routemap_commands) },
+ { PARSE_ADD_SHOW_ROUTEMAP_EXTEND, &pname(show_routemap_ipc_commands) },
+ { PARSE_LIST_END, NULL }
+ };
+
+ void
+ routemap_parser_init (vcid)
+ {
+ routemap_debug_init();
+ parser_add_command_list(routemap_chain_init_table, "Route-map commands");
+ }
+
+
+
+
==============================================================================
```